REMARKS

Claims 1-3, 6-14, 19, and 26-27 are pending for the Examiner's review and consideration. Claim 26 has been re-written in independent form and no new matter has been introduced, so that this change should be entered at this time. In view of the following comments, it is believed that the entire application is in condition for allowance.

Claims 1-3, 6-13, 19, 26 and 27 were rejected under 35 U.S.C. § 103(a) as obvious over the combination of US patents 6,780,796 to Maa et al. (Maa) and 6,323,108 to Kub et al. ("Kub"). Applicants traverse this rejection, which was first made in the final office action.

Claims 1 and 26 recite a method of preparing a crystalline wafer in which a first composite structure is provided with an epitaxial layer that is in a strained state on a support substrate. The epitaxial layer is relaxed to an at least partially relaxed state, and a region of weakness is created substantially between the epitaxial layer and the support substrate. A receiving substrate is associated with the composite structure, which is split at the region of weakness to provide a production wafer and a donor wafer.

Maa discloses relaxing a SiGe layer by implanting H_2^+ ions beyond and into a region well below the strained SiGe layer. While Maa does disclose a relaxation process, the relaxed strained layer is not associated with a receiving substrate, nor is there any disclosure, teaching or suggestion of the splitting of the relaxed strained layer. The office action confirms these points on page 3. Thus, the Maa teaching does not provide for transferring the SiGe layer to a receiving wafer. Instead, Maa performs an implantation simply for relaxing the strained material. This procedure, however, is not conducted to and does not provide a weakened zone in the material. Thus, Maa does not teach or disclose a number of the presently recited method steps of claims 1 or 26, and for that reason is not material to the patentability of the present claims. Kub is then cited to remedy the deficiencies of Maa.

Kub does describe the formation of a relaxed strained layer onto a supporting substrate, but he achieves this by transferring a strained layer onto the substrate and subsequently relaxing the layer by compliant effort with an appropriate heat treatment. In contrast, the present claims are directed to the transfer of a relaxed strained layer onto a substrate. This is as different from Kub as Kub is from Maa. In fact, the combination of Maa and Kub, at best, would possibly lead to the transfer of a strained layer followed by relaxation of the strained layer. This is not the

presently claimed process, wherein the layer is relaxed before being transferred. Thus, the combination of Maa and Kub does not result in the presently claimed invention.

The office action states at page 4 that it is obvious to combine the patents since they are both from the same field of endeavor. This is an incorrect way to formulate an obviousness rejection, since there is no teaching or motivation in one patent to modify or change the other to result in the presently claimed method. And, as noted above, the combination of the references cannot result in what is claimed in independent claims 1 and 26. Thus, the rejection based on the combination of Maa and Kub has been overcome and should be withdrawn.

Claim 14, was rejected as being unpatentable over the combination of Maa, Kub and US patent 6,787,793 to Yoshida.

Yoshida discloses the fabrication of SiGe layers on a support. A first layer is relaxed by annealing until its lattice constant becomes the same as that of the next SiGe layer to be deposited. Again, like Maa and Kub, there is no transfer of a relaxed strained layer onto the substrate. Furthermore. Yoshida does not remedy the deficiencies of Maa and Kub and no combination of these three references can result in the presently claimed invention. Thus, this rejection has been overcome and should be withdrawn.

Finally, it should be noted that claim 26 further defines that the implantation of the atomic species both creates the region of weakness and provides dislocations for relaxing the strained state of the epitaxial layer. This claim provides a further surprising advantage over the references in that it allows the use of a single step to obtain both the relaxation and the region of weakness for the subsequent splitting operation. As previously explained, it has been realized by the inventors that it is especially advantageous to implant atomic species directly between the strained layer and the supporting substrate, since this boundary has a localizing effect, which causes the atomic species being implanted to be focused narrowly in the crystalline transition between the strained epitaxial layer and the supporting substrate. Consequently, a much narrower region of weakness can be created than with traditional implantation methods, which results in a smaller region of damaged material that would usually be removed after the splitting. This results in more efficient use of the wafer material by reducing waste, and claim 26 thus provides another surprising advantage over the references, and is further distinguishable from the cited art for this reason.

In view of the foregoing, it is believed that the entire application is presently in condition for allowance. Should any issues remain, a personal or telephonic interview is respectfully requested to discuss the same in order to expedite the allowance of the application.

Respectfully submitted,

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Date

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